Green Mountain Energy Company

The Green Mountain Energy℠ solar installation at The Winston School in Dallas, Texas, generates pollution-free, renewable electricity.

Buying Green Power— You Really *Can* Make a Difference

Regardless of where you live, you can purchase green power to encourage greater use of renewable energy technologies.

by Blair Swezey and Lori Bird

The electricity that we use in the U.S. is primarily generated with coal (52 percent), nuclear (20 percent) and natural gas (16 percent), with the remainder coming from hydropower (7 percent), oil (3 percent) and other renewable sources (2 percent). The environmental repercussions of this generation mix are considerable. According to the U.S. Environmental Protection Agency (EPA), electricity generation is responsible for two-thirds of the sulfur dioxide, one-third of the mercury and one-quarter of the nitrogen oxides emitted annually in the U.S. In addition, use of fossil-based energy sources contributes significantly to emissions of fine particulate matter and carbon dioxide, a leading greenhouse gas.

For many years, concerned members of the public and the renewable energy industry have worked diligently in regulatory and public policy arenas advocating for greater attention to energy efficiency and the development of our abundant domestic renewable energy sources. And there have been many successes.

For example, federal energy legislation passed in 1978 required electric utilities to purchase power from independent generators using renewable fuels and both federal and state governments have offered various types of financial incentives to encourage the development of renewable electric projects. More recently, 13 states have now passed renewable portfolio standards that require power suppliers to obtain a portion of their electric energy—ranging from 1.1 percent in Arizona to 30 percent in Maine—from renewable energy sources. And 16 states have established renewable energy funds, for which fees are collected from electricity customers to fund renewable energy projects.

Yet for all these successes, non-hydro renewable energy sources still only account for little more than 2 percent of total electricity supply. And with electricity demand continually growing, the challenge of substantially increasing this share remains daunting.

Do I Have a Choice?

As consumers of electricity, we write checks every month to a utility or other power supplier to pay for the electricity we use to light, heat and cool our homes and to power our appliances. And whether we realize it or not, by making these payments, we give our tacit approval to the manner in which this electricity is generated. But do we really have any choice in the matter?

Yes we do! Over the last several years, a new industry has been developing around the notion of giving customers the choice of buying power generated from more environmentally benign energy sources. The term "green power" has come to signify electricity generated in whole or in part from renewable energy sources like wind, solar, geothermal and biomass. Customers can decide to have all or some portion of their power needs supplied from green power.

Because of some basic laws of physics, the green power is not directed to each individual customer's house and no, the color of the electrons really isn't any different. Rather the renewably generated power is added to the mix of power that serves all customers. The key point to understand is that every electron generated from a renewable energy source is an electron that need not be generated from fossil or nuclear sources.

Tennessee Valley Authority

The 2-MW Buffalo Mountain Wind Project in Oliver Springs, Tennessee, features three 660-kW turbines that are part of the Tennessee Valley Authority's Green Power Switch energy program, which lets consumers buy a portion of their power from renewable energy sources. TVA plans to add 20 MW of wind power by October 2003.

So What's the Catch?

Unfortunately, in spite of the research and commercial development that has occurred over the last two decades, tapping our renewable energy sources is still a bit more expensive than using more conventional energy sources. Of course, the price we pay for today's electricity does not properly account for the environmental damages and other "externalities" associated with our use of fossil and nuclear fuels. Rather, we end up paying these "hidden" costs in the form of federal and state expenditures on environmental remediation and increased health care costs associated with the growing incidence of lung and other types of respiratory diseases among the general public.

So, as a result, green power costs a little more in the market. Think of it as buying premium gasoline instead of regular gasoline to make your car run better. Or in this case, paying a premium for an electricity product to make your body and the environment run better.

But, in comparison to other household expenditures, green power really isn't that costly. Utilities generally offer green power in blocks of 100 kilowatt-hours (kWh) of monthly consumption at a rate premium of from $0.01/kWh to $0.03/kWh. Or, typically, you can choose to buy all of your electricity as green power. An average U.S. residential customer who uses about 850 kWh per month and pays a green power premium of $0.02/kWh could power an entire household with renewable energy for only about $17.00 more per month or about the cost of a movie for two.

How Can I Buy Green Power?

About 40 percent of electricity customers across the U.S. today have the option of purchasing green power directly from a retail electricity supplier. This supplier may be your local utility or, if you live in a state that has "restructured" its electricity market, a competitive retail electricity supplier.

More than 300 utilities in 31 states, including investor-owned utilities, rural electric cooperatives and other publicly owned utilities, offer a voluntary "green pricing" option to their customers or are in the process of developing such a program. Green pricing is a separate tariff designed specifically for the utility to sell green

power. In most cases, these programs are open to commercial and industrial customers as well as residential customers.

In states with restructured (or competitive) electricity markets, retail electricity customers can often choose from among multiple electricity suppliers, some of which may offer green power. Electricity markets are open to competition in nearly a dozen states with green power marketers active in many of these.

However, even if the local utility does not offer green power and competitive retail options are not available, you can still purchase green power from regionally or nationally based companies that offer "renewable energy certificates." These certificates represent the environmental attributes of electricity generated from renewable energy sources. While the physical electricity is sold into the regional market where the power is generated, the certificates can be sold anywhere in the country—or the world for that matter.

An important virtue of certificate products is that the marketer avoids the cost of physically delivering the power to the customer over transmission and distribution lines, and instead delivers only the environmental benefit, which helps hold down costs. About a dozen companies are actively marketing renewable energy certificates in the U.S.

Comparing Product Options

In the case of a utility program, you may have few, if any, choices among green power products, although a handful of utilities do offer more than one product. In competitive markets, there may be more than one green power supplier and multiple products to choose from. And whether or not your retail supplier offers green power, you can choose from among several renewable energy certificate products that are available nationwide.

To help with comparisons between green power and traditional product options, about 20 states now require retail power providers to divulge certain information about the fuel sources used to generate electricity. Some states, such as California, only require disclosure of the fuel mix, while others, such as Texas, also require disclosure of environmental impacts, such as air pollutant emissions and nuclear waste creation. Most states require use of a standard reporting format, enabling consumers to easily compare product offers.

How Do I Know It's Really "Green?"

Because customers cannot individually meter or otherwise monitor the flow of these green electrons, it is appropriate to ask what assurances utilities and marketers can provide that the premiums being paid are actually being used to support increased renewable energy production.

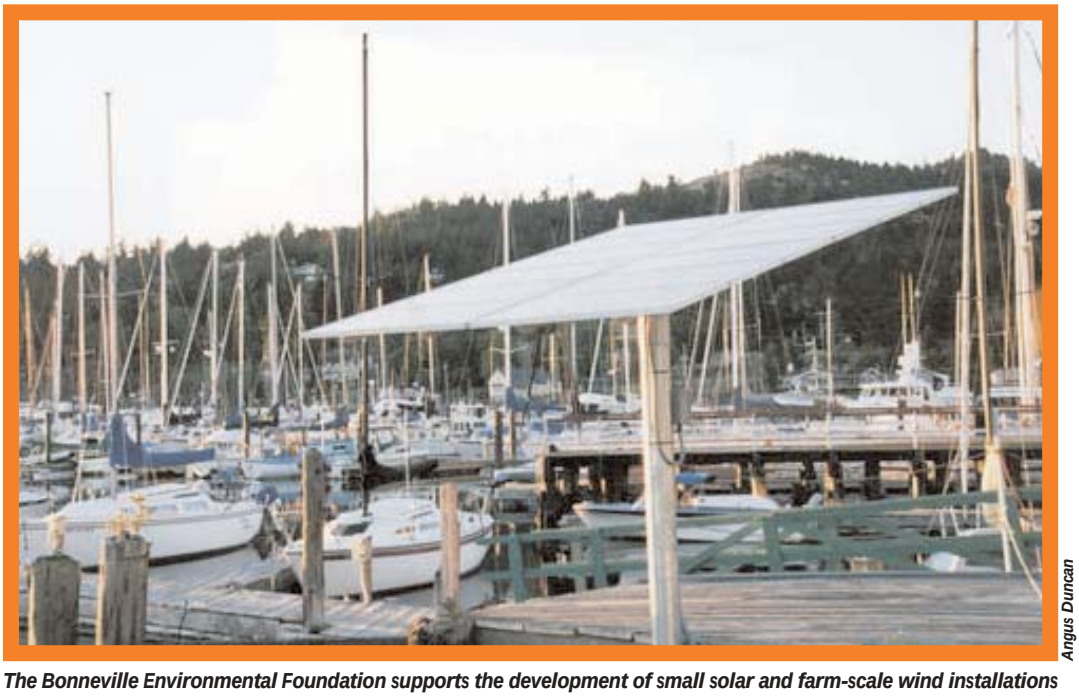
Certification programs can help verify the claims made by utilities and marketers that green power is delivered to the grid from the specified sources and in the proper amounts. Green-e is the leading national certification and verification program for environmentally preferred electricity products offered in competitive power markets. It is administered by the Center for Resource Solutions (CRS), a nonprofit environmental organization based in San Francisco. For a green power product to be eligible for Green-e certification, at least half of the energy supply must come from renewable resources such as wind, solar, geothermal, biomass or small hydro. The product must also contain a percentage of recently developed (new) renewable resources.

Any non-renewable portion of the product mix must be as clean or cleaner than the overall system power mix and also must not contain any more nuclear energy than the system mix. In addition, certified suppliers must disclose their power sources to customers and agree to an annual third-party audit to verify their marketing claims. Green-e certifies retail and wholesale green power products in California, Connecticut, New Jersey, Pennsylvania and Texas.

The Center for Resource Solutions Green-e logo.

CRS also administers a national Green Pricing Accreditation Program for green power programs offered by utilities in non-competitive markets. The program is designed to recognize utility programs that use "best practices" in offering green electricity options to customers. Utility green pricing programs can become accredited if they meet or exceed stringent standards regarding renewable resource content, product pricing, marketing activities and information disclosure. Accredited utilities are also required to undergo an annual, independent verification process to document their green power deliveries. Accredited utilities are able to use the Green-e logo. In addition, CRS recently launched a certification program for renewable energy certificates.

Renew 2000 is a certification program available for green power products offered in the Pacific Northwest. Green power products are eligible for certification under the program if they meet certain criteria regarding resource content, including newly developed renewables, program design, fuel mix disclosure and



Angus Duncan

The Bonneville Environmental Foundation supports the development of small solar and farm-scale wind installations like this solar electric system at the Westsound Marina in Westsound, Washington, by purchasing the environmental attributes of the renewable generation.

Jim Schroeder

Xcel Energy has installed a total of 60 MW of wind energy generating capacity at two sites, including this new project near Peetz, Colorado, to serve green power customers in Colorado.

marketing. The product standards were developed by a regional coalition of environmental groups, utilities and governments.

Although not a certification program per se, another available tool for evaluating the environmental impact of different electricity products is the Power Scorecard, a web-based information tool created by a coalition of environmental groups. The Power Scorecard rates electricity products on a scale from "excellent" to "unacceptable" using two measures—the environmental impact on air, land and water, and the amount of energy generated from recently developed renewable, low-impact sources. Currently, the Power Scorecard is available to compare competitive retail products offered in Pennsylvania and New Jersey.

Are There Other Benefits?

One of the biggest challenges to the success of green power marketing is that utilities and marketers are essentially asking individual customers to pay a premium for a product that benefits the public at large. That is, if you choose to pay more for green power but your neighbor does not, he still benefits from the cleaner air that results from your purchase decision.

To help overcome this "free rider" problem, utilities and marketers have tried to create additional value for green power purchasers. In some cases, green power customers are treated to special events or receive service or merchandise discounts from participating retail establishments. Business customers may be recognized in utility advertising or newsletters. Some utility programs have focused on installing solar systems on public schools, which provide "free" electricity to the school and educational benefits to students. And a limited number of utilities and marketers offer a fixed-rate product that protects green customers from fluctuations in the cost of the fuels that are used in the utility's regular electricity product.

In addition to solar schools programs, green power marketing is also being used to support the development of small-scale, localized systems. For example, Chelan County Public Utility District in Washington State uses customer donations to support the development of grid-connected solar and wind energy projects within the county. The Bonneville Environmental Foundation is supporting the development of small solar and farm-scale wind installations by purchasing the environmental attributes of the renewable generation. And in Texas, in addition to receiving 100 percent wind energy, customers of Green Mountain Energy Company can help support the installation of new solar projects by joining the Big Texas Sun Club for a $5.00 monthly membership fee.

Can I Really Make a Difference?

Finally, when all is said and done, are green power purchases actually resulting in increased renewable energy development? Although the industry is still in its formative stage, data that we collect at the National Renewable Energy Laboratory shows that more than 400,000 electricity customers are now buying green power. The market demand created by these customers has resulted in the actual or planned development of more than 1000 megawatts (MW) of new renewables-based generating capacity compared to an installed renewables base of about 19,000 MW nationwide.

One of the more encouraging trends in the industry is that cities, state and federal agencies, and both large and small companies are increasingly making green power purchase commitments. The State of Maryland, which in 2001 established a state-level green power purchasing goal of 6 percent, recently solicited bids to increase this percentage to 20 percent. In addition, more than 140 MW of new wind energy capacity is under development in Pennsylvania and surrounding states to meet the demand of a number of large customers, including private businesses, government agencies and colleges and universities. As a result of these and other commitments, nearly one-third of all the green power being supplied by utilities is now purchased by non-residential customers.

While public policy decisions at both the state and federal levels are likely to remain the most important drivers of future renewable energy development, it is becoming increasingly clear that by using the power of our pocketbooks, we, as individual consumers, can also influence how our electricity is produced. ✲

Blair G. Swezey (e-mail: blair_swezey@nrel.gov) is Principal Policy Advisor and Lori A. Bird (e-mail: lori_bird@nrel.gov) is a senior energy analyst with the National Renewable Energy Laboratory, 1617 Cole Boulevard, Golden, Colorado 80401, web site: www.eren.doe.gov/greenpower. Both authors purchase green power to meet 100 percent of their household electricity needs. For up-to-date lists of utilities and marketers offering green power, please refer to the Green Power Network web site at www.eren.doe.gov/greenpower.

For More Information

For up-to-date lists of utilities and companies offering green power, visit these web sites:

Table of Utility Green Pricing Programs
www.eren.doe.gov/greenpower/summary.shtml

Table of Green Power Product Offerings in States with Competitive Retail Markets
www.eren.doe.gov/greenpower/mkt_summ.shtml

Table of Renewable Energy Certificate Offerings
www.eren.doe.gov/greenpower/certificates.shtml#gcertTable